



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

MAY 15 2014

Mr. Gregory P. DeAngelo
Program Administrator
Water Quality Evaluation and TMDL Program
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. DeAngelo:

The U.S. Environmental Protection Agency has determined that the statutory requirements of the Clean Water Act (CWA), Section 303(d) have been met and therefore approves the Total Maximum Daily Load (TMDL) for the following waterbody:

<u>Basin</u>	<u>Segment Name</u>	<u>WBID</u>	<u>Pollutant(s)</u>	<u>TMDL Document ID</u>
Upper East Coast	Halifax River	2363B	Nutrient	55080

The enclosed TMDL Decision Document summarizes the elements of the review that were found to support the EPA's approval of the TMDL.

In addition to submitting the Halifax River TMDL (WBID 2363B) to the EPA for review pursuant to section 303(d) of the CWA, FDEP has submitted the TMDL for review as new or revised water quality standards (WQS), since the TMDL will also act as a Hierarchy 1 site specific interpretation of the state's narrative nutrient criteria pursuant to 62-302.531(2)(a)1.a. The EPA acknowledges that by virtue of establishing the TMDL in 62-304, FDEP is also establishing a Hierarchy 1 interpretation of the narrative nutrient criteria for this waterbody.

Section 5 of 403.061(43), Florida Statutes, established a narrative nutrient criterion for any estuaries not already subject to FDEP's numeric nutrient criteria by August 1, 2013. The Halifax River (WBID 2363B) was not otherwise subject to FDEP's numeric nutrient criteria on August 1, 2013. Section 5 of 403.061(43) established the current conditions of those unimpaired waters as the narrative criterion. The legislation also directed FDEP to provide its calculation of the numeric values representing such current conditions to the Governor, the President of the Senate and the Speaker of the House of Representatives by August 1, 2013 (Governor's Report). The EPA approved the WQS established in the legislation and the Governor's Report on September 26, 2013. Section 5 of 403.061(43) further provides that the legislative narrative applies "until such time as a numeric interpretation of the narrative water quality criterion for nutrients is established by rule or final order." While the criteria contained in this Hierarchy 1 interpretation are the same as those WQS approved in September 2013, by operation of the statute those criteria are no longer legally applicable to the Halifax River (WBID 2363B). Therefore, the EPA is approving the Hierarchy 1 interpretation as the new legally binding criteria for this waterbody. Since the

level of protection provided in this WQS is the same as that established in the legislative narrative, as calculated in the Governor's Report, the EPA is approving the Hierarchy 1 interpretation for the same reasons set out in its approval document of September 26, 2013.

If you have any comments or questions relating to the approval of the TMDL or the enclosed TMDL Decision Document, please contact me at (404) 562-9345, or have a member of your staff contact Ms. Amanda Howell of my staff at (404) 562-8017.

Sincerely,

A handwritten signature in black ink that reads "Gail Mitchell, for". The signature is written in a cursive, flowing style.

James D. Giattina

Director

Water Protection Division

Enclosure

TMDL Review Checklist

Final TMDL

TMDL Document Name: Nutrient Total Maximum Daily Load (TMDL) for Halifax River (WBID 2363B)

State/County: Florida/ Volusia County
Basin: Upper East Coast

Reviewer: Tara Levine Houda

HUC: Not available in TMDL Report

Date of Submittal: 8/1/2013

Use Classification: Class III M: Use for Recreation, Propagation and Maintenance of a Healthy, Well-balanced Population of Fish and Wildlife.

Pollutant(s): Total Nitrogen

ESA / EJ Issues (Y/N), If Yes, Which waters /areas?
Yes, all waters may contain endangered species.

Type of TMDL (Point / Nonpoint /Both): Both (Nonpoint and Point)

Waters Addressed By TMDL: Halifax River (WBID 2363B)

Additional National TMDL Tracking System Entry Parameters

TMDL doc ID: 55080

303(d) List ID: 2363B

303(d) List Cycle (Yr): 1998
Group 5 Cycle 2 (2012)

EPA Developed? No

Lead State: Florida

Pollutant ID: TN

TMDL Target:

A 9 percent reduction is required from nonpoint and NPDES stormwater sources in order to meet the TMDL of 1.13 for TN in the Halifax River (WBID 2363B).

The NPDES wastewater dischargers must meet their applicable permit limits and specifications (section 6.3.1 in the TMDL Report).

Impacted PCS NPDES Permit IDs:

Ormond Beach WWTF (FL0020532), Holly Hill WWTF (FL0027677), Daytona Beach/Bethune Point WWTF (FL0025984)

Phase II MS4 permits: FLR04E060, FLR04E011, FLR04E036, FLR04E033, FLR04E024

Impacted Non-PCS Permit IDs: N/A

TMDL Review Checklist

Review Element	Required	Included (<i>check if yes</i>)
Submittal Letter	Yes	Yes
Scope of TMDL	Yes	Yes
Applicable Water Quality Standards and Numeric Targets*	Yes	Yes
Loading Capacity*	Yes	Yes
Wasteload Allocations (WLAs)*	Yes	Yes
Load Allocations (LAs)*	Yes	Yes
Margin of Safety (MOS)*	Yes	Yes
Seasonal Variation*	Yes	Yes
Public Participation	Yes	Yes
Other Considerations	As necessary	N/A
Recommended Action		Approve

*These elements are required by statute and implementing regulations.

TMDL Review Checklist Supporting Rationale and Comments

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 CFR §130 describe the statutory and regulatory requirements for approvable TMDLs. The following information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under § 303(d) and EPA regulations. When the information listed below uses the verb "must" or "require," this denotes information that is needed by EPA to review elements of the TMDL required by the CWA and by regulation.

Submittal Letter

Considerations:

- Each final TMDL submitted to EPA should be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under §303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute.

Conclusions: Accompanying the State's final TMDL for nutrients is a submittal letter from Jan Mandrup-Poulsen of FDEP which states, "Enclosed are documents to support your review of three nutrient Total Maximum Daily Loads (TMDLs) for impaired waterbodies in the Upper East Coast Basin that have been proposed and adopted as a rule by the State of Florida on August 18, 2013. These waterbodies include the Halifax River (WBID 2363B), the Tomoka River (WBID 2634), and Palm Coast (WBID 2363D)." Thus, the submittal letter clearly establishes the Agency's duty to review the State's nutrient TMDLs submittal under 303(d) of the Clean Water Act.

Scope of TMDL

Considerations:

- The TMDL should describe the waterbody as it is identified on the State/Tribe's § 303(d) list, the pollutant(s) of concern, and the applicable water quality criteria that led to impairment listing. The waters addressed by the TMDL must be identified and consistent with the 303(d) list.
- The TMDL should include a statistical evaluation of all readily available data that was used to place the waterbody on the 303(d) list.
- The TMDL submittal must include a description of the point, nonpoint, and natural background (where possible) sources of the pollutant of concern. Such information is necessary for EPA's review of the load and wasteload allocations, which are required by regulation. The TMDL submittal should also contain a description of any important factors, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation, as applicable; and (3) present and future growth trends, if this is a factor that was taken into consideration in preparing the TMDL.

Conclusions: The TMDL report addresses a Section 303(d) listed waterbody.

The IWR requires the State to "assemble and evaluate" data in order to prepare for the development of the State's section 303(d) list. Florida has an extensive monitoring network and a robust data collection that is managed and compiled into Florida's IWR database. This database is used to determine if waterbodies are meeting their designated use and if a TMDL is needed.

The TMDL report describes the source categories, subcategories, or individual sources of nutrients in the watershed. The wasteload allocation and the load allocation are displayed in Table 6.1. Within the TMDL report, the pertinent background information is included in the text, tables and figures. Chapter 4 of the TMDL report discusses the source assessment for the waterbodies. Table 4.1 reports the land use categories in the watershed. The dominant land use categories are residential (~40%) and bays/estuaries (~40%). Section 4.2.1 discusses the point sources in the watershed. Section 4.2.2 discusses the possible nonpoint sources of nutrients.

Loading Capacity

Considerations:

- EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating water quality standards [40 CFR §130.2(f)]. The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure [40 CFR § 130.2(i)]. The TMDL submittal must identify the waterbody's loading capacity for the applicable pollutant. To the degree it is known, it should also describe the cause and effect relationship between the identified pollutant sources, the numeric target (narrative target if appropriate), and achievement of water quality standards.
- Supporting documentation for the TMDL analysis must also be contained in the submittal. This should include a description of the analytical process used, results from water quality modeling, assumptions, etc. The TMDL submittal should also contain a description of other important factors, such as an explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable.
- Critical conditions must be considered as part of the analysis of loading capacity [40 CFR § 130.7(c)(1)]. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that result in attaining and maintaining the water quality criterion and have an acceptably low frequency of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards.

Conclusions: The linkage between water quality and pollutant sources can be found in Chapter 5 of the TMDL report. The methodology used for the TMDL is the "percent reduction" methodology.

"The IWR listing threshold for nutrients in estuaries is based on an annual average chla concentration. Annual average chla in 2010 exceeded the threshold of 11 micrograms per liter (ug/L)."

"The annual average chla concentration in 2010 exceeded the IWR estuarine threshold of 11 ug/L, and, based on the TN/TP ratio, nitrogen was identified as the limiting nutrient."

"Linear regressions of each parameter versus sampling date indicated that the regressions of TP and Color were significant at an α level of 0.05."

"A nonparametric test (Kruskal-Wallis) was applied to the CHLAC, INORGN, TN, INORGP, TP, COND, COLOR, and TSS datasets to determine whether there were significant differences among seasons (Appendix D). At an α level of 0.05, differences were significant among seasons for all the parameters. A similar test for differences among years was significant for all the parameters (Appendix E)."

"A Spearman correlation matrix was used to assess potential relationships between CHLAC and other water quality parameters (Appendix H). At an alpha (α) level of 0.05, correlations between CHLAC and, COLOR, COND, NH4, NO3O2, TEMPC, INORGN, TN, TP, TSS, TURB, PRECIP, V3DAY, V14DAY, V21DAY, and INORGP were significant."

"The Impairment listing identified TN as the limiting nutrient. Figure 5.7 illustrates the time series of the TN/TP ratio. Although the R2 value is very small, the regression was significant at an alpha (α) level of 0.05. A similar plot of the INORGN/INORGP ratio had a slope of 0.00001 with an R2 value of 0.00032, which was not significant at an alpha (α) level of 0.05. Summary statistics for the ratios can be found in Table 5.3. Based on the INORGN/INORGP ratio, it appeared that inorganic forms of nitrogen were typically limiting compared with inorganic phosphorus (75% value was 3.51)."

"Simple linear regressions of the annual average CHLAC versus the three-year cumulative deficit and the five-year cumulative deficit were significant at an alpha (α) level of 0.05."

"As the nutrient impairment listing was based on exceeding an annual average CHLA concentration of 11 $\mu\text{g/L}$ and a 50% increase of the historical minimum would also be 11 $\mu\text{g/L}$, an annual average CHLAC concentration of 9 $\mu\text{g/L}$ was used as a target to develop nutrient reductions. Correlations between CHLAC and TN were significant. An annual average TN concentration of 1.13 mg/L would yield a predicted annual average CHLAC concentration of 9 $\mu\text{g/L}$. Based on the cumulative frequency plot of annual average TN concentrations (Figure 5.8), the 91st percentile concentration is 1.13 mg/L. The TMDL requires a 9% reduction in the annual average TN concentration to meet an annual average CHLAC target of 9 $\mu\text{g/L}$ or lower in the Halifax River watershed."

"The TMDL for the Halifax River is expressed in terms of a percent reduction in TN to meet the nutrient criterion (Table 6.1)."

Table 6.1. TMDL Components for Halifax River

WBID	Parameter	TMDL ¹ (mg/L)	TMDL (% Reduction)	WLA		LA (% Reduction) ²	MOS
				Wastewater (mg/L)	NPDES Stormwater (% Reduction) ¹		
2363B	TN	1.13	9	314,376	9%	9%	Implicit

1 Nutrient concentration represents an annual average.

2 As the TMDL represents a percent reduction, it also complies with EPA requirements to express the TMDL on a daily basis.

A 9 percent reduction is required from nonpoint and NPDES stormwater sources in order to meet the TMDL of 1.13 for TN in the Halifax River (WBID 2363B).

Chapter 5.1.3 discusses critical conditions. "Nonparametric tests (Kruskal-Wallis) were presented in Appendices C and D that illustrated significant differences in CHLAC and nutrients on both a seasonal and annual basis."

Wasteload Allocations (WLAs)

Considerations:

- EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources [40 CFR § 130.2(h)].
- Wasteload allocations must be assigned to each point source discharging the pollutant of concern [40 CFR 130.2(i)]. WLAs can be expressed as lumped or aggregate allocations if appropriate.
- If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero.
- The wasteload allocations should be sufficient, in consideration of nonpoint source loads, to ensure that the point sources will not cause or contribute to excursions of water quality standards [40 CFR §122.44(d)(1)].

Conclusions:

A 9 percent reduction is required from NPDES stormwater sources in order to meet the TMDL of 1.13 for TN in the Halifax River (WBID 2363B).

The Ormond Beach WWTF (FL0020532): "permitted annual average discharge of 6.0 million gallons per day (MGD), with discharge to the Halifax River and reuse." "The permitted annual average TN concentration is 6 mg/L, with a maximum discharge of 150 pounds per day (lbs/day). The permitted annual average TP concentration is 1 milligram per liter (mg/L) with a maximum discharge of 50 lbs/day." "TN concentrations (181 values) over this period ranged between 0.32 and 4.97 mg/L, with a median concentration of 2.19 mg/L (mean of 2.29 mg/L). The corresponding TN daily loads ranged between 3.48 and 160.5 lbs/day, with a median of 41.0 lbs/day (mean of 44.0 lbs/day). TP concentrations over the same period (181 values) ranged between 0.07 and 1.72 mg/L, with a median concentration of 0.35 mg/L (mean of 0.40 mg/L). The corresponding TP daily loads ranged between 0.64 and 51.28 lbs/day, with a median of 5.60 lbs/day (mean of 7.49 lbs/day)."

The Holly Hill WWTF (FL0027677): "permitted annual average discharge of 2.4 MGD, with discharge to the Halifax River." "The permitted annual average TN concentration is 3 mg/L, with a maximum single sample discharge of 60 lbs/day. The permitted annual average TP concentration is 1 mg/L, with a maximum single sample discharge of 20 lbs/day." "TN concentrations (182 values) over this period ranged between 1.12 and 25.0 mg/L, with a median concentration of 2.33 mg/L (mean of 2.61 mg/L). The corresponding TN maximum single sample daily loads ranged between 1.63 and 267.0 lbs/day, with a median of 26.70 lbs/day (mean of 33.20 lbs/day). TP concentrations over the same period (181 values) ranged between 0.0 and 1.14 mg/L, with a median concentration of 0.26 mg/L (mean of 0.30 mg/L). The corresponding TP maximum single sample daily loads ranged between 0.0 and 14.70 lbs/day, with a median of 3.15 lbs/day (mean of 3.75 lbs/day)."

Daytona Beach/Bethune Point WWTF (FL0025984): "The permitted annual average discharge is 20 MGD with annual average limits for TN and TP of 3 and 1 mg/L, respectively. Maximum single-sample TN and TP loads are 570 and 190 lbs/day, respectively. Based on discharge monitoring reports over the January 1997 to April 2012 period, discharges (183 values) ranged between 1.6 and 18.3 MGD, with a median discharge of 7 MGD (mean of 7.34 MGD). TN concentrations (156 values) over the period from May 1998 to April 2012 ranged between 1.30 and 7.7 mg/L, with a median concentration of 2.65 mg/L (mean of 3.14 mg/L). The corresponding TN monthly average loads ranged between 873.8 and 20,466.9 lbs, with a median of 4,738.2 lbs (mean of 5,815.6 lbs). TP concentrations over the same period (164 values) ranged between 0.1 and 2.157 mg/L, with a median concentration of 0.66 mg/L (mean of 0.74 mg/L). The corresponding TP monthly average loads ranged between 7.43 and 5,222.5 lbs, with a median of 1,052.9 lbs (mean of 1,349.4 lbs)."

"Portions of the Halifax River fall within the boundaries of several Phase II municipal separate storm sewer system (MS4) permits, including the City of Holly Hill (FLR04E060), the City of Daytona Beach (FLR04E011), the City of Ormond Beach (FLR04E036), and Volusia County (FLR04E033). The Florida Department of Transportation (FDOT) District 5 is a co-permittee with Volusia County (FLR04E024)."

Load Allocations (LAs)

Considerations:

- EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background [40 CFR § 130.2(g)]. Load allocations may range from reasonably accurate estimates to gross allotments [40 CFR § 130.2(g)]. Where it is possible to separate natural background from nonpoint sources, load allocations should be

described separately for background and for nonpoint sources.

- If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero load allocation, the LA must be expressed as zero.

Conclusions: The nonpoint sources received LAs to meet the TMDL.

A 9 percent reduction is required from nonpoint sources in order to meet the TMDL of 1.13 for TN in Halifax River (WBID 2363B).

Margin of Safety (MOS)

Considerations:

- The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality [CWA § 303(d)(1)(C), 40 CFR § 130.7(c)(1)]. EPA guidance explains that the MOS may be implicit, i.e. incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e. expressed in the TMDL as loadings set aside for the MOS.
- If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

Conclusions: An implicit margin of safety was used for this TMDL. For additional information pertaining to the MOS, please refer to Section 6.4 of the TMDL report. "An implicit MOS was used in the development of this TMDL by setting an annual CHLAC target concentration of 9 µg/L, which is 2 µg/L below the listing threshold for impairment, and applying a 9% reduction to annual average TN concentrations. The 9% reduction is based on the cumulative frequency of annual averages but will also result in annual averages below the target concentration of 1.13 mg/L. The overall average over the 1995 to 2010 period is 0.84 mg/L, and applying a 9% reduction to each year results in a new overall average of 0.76 mg/L."

Seasonal Variation

Considerations:

- The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for considering seasonal variations in the TMDL must be described [CWA § 303(d)(1)(C), 40 CFR § 130.7(c)(1)].

Conclusions: Seasonality was addressed in the TMDL reports by assessing water quality in the impaired waterbodies based on the data collected throughout the years.

Public Participation

Considerations:

- EPA regulations require public review [40 CFR § 130.7(c)(1)(ii), 40 CFR § 25] consistent with State or Tribe's own continuing planning process and public participation requirements. In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval must describe the State/Tribe's public participation process, including a summary of significant comments and the State/Tribe's responses to those comments.

Conclusions: The State's public participation process is consistent with regulations.

Other Considerations

Considerations:

- This section may be needed in the TMDL review in order to describe unique factors or information specific to the TMDL under review, which help explain the basis for EPA's decision.

Conclusions: N/A

Final Recommendation/Comments

EPA has determined that the statutory requirements of the Clean Water Act, Section 303(d) have been met and therefore, approves the Halifax River TMDL (WBID 2363B).

In addition to submitting the Halifax River TMDL (WBID 2363B) to EPA for review pursuant to section 303(d) of the CWA, FDEP has submitted the TMDL for review as new or revised WQS, since the TMDL will also act as a Hierarchy 1 site specific interpretation of the state's narrative nutrient criteria pursuant to 62-302.531(2)(a)1.a. EPA acknowledges that by virtue of establishing the TMDL in 62-304, FDEP is also establishing a Hierarchy 1 interpretation of the narrative nutrient criteria for this waterbody.

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APPROVE

Mr. Jan Mandrup-Poulsen
Environmental Administrator
Watershed Assessment Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Mandrup-Poulsen:

The U.S. Environmental Protection Agency has determined that the statutory requirements of the Clean Water Act, Section 303(d) have been met and therefore, approves the Total Maximum Daily Load (TMDL) for the following waterbody:

<u>Basin</u>	<u>Segment Name</u>	<u>WBID</u>	<u>Pollutant(s)</u>	<u>TMDL Document ID</u>
Upper East Coast	Halifax River	2363B	Nutrient	55080

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If you have any comments or questions relating to the approval of the TMDL or the enclosed TMDL Decision Document, please contact me at (404)562-9345, or have a member of your staff contact Ms. Tara Levine Houda of my staff at (404)562-9762.

Concurrences: TMDL Approval for Halifax River Nutrients

Initials	<i>TH</i>	<i>LP</i>	<i>CB</i>	<i>SC</i>	<i>CT</i>	<i>TH</i>
Date	4/14/14	12/6/13	4/11/14	4/30/14	5/7/14	
Name	T. Houda	L. Petter	C. Baschon	S. Campbell	C. Thomas	

